AMENDMENTS TO CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

What is claimed is:

1. (withdrawn) An antenna apparatus comprising a plurality of directional antenna elements, wherein each element of the plurality of elements is oriented in a different direction relative to an axis, and each element is identified by an identifier.

2. (withdrawn) The apparatus of claim 1, wherein the plurality of elements are arranged so as to form a substantially cylindrical apparatus.

3. (withdrawn) The apparatus of claim 1, wherein the plurality of element are arranged so as to form an arc.

4. (withdrawn) The apparatus of claim 1, wherein at least one of the elements is tilted at an angle relative to a horizontal plane.

5. (withdrawn) The apparatus of claim 4, wherein the plurality of elements are arranged so as to form a substantially conical apparatus.

6. (withdrawn) The apparatus of claim 1, wherein a packet communicated by the antenna includes a dedicated routing field which includes an identifier that identifies a specified element among the plurality of elements, wherein the specified element is used for communicating of the packet.

7. (withdrawn) The apparatus of claim 6, wherein the routing field of the packet further includes routing information, identifying at least one intermediary communication device between a source of the packet and a final destination of the packet.

8. (withdrawn) The apparatus of claim 6, wherein the identifier that identifies the element that transmits the packet.

9. (withdrawn) A system comprising a first node and a second node in a wireless network, wherein a packet is used for communicating between the first and second node, and the packet includes a dedicated routing field that includes an identifier that identifies a specified antenna among a plurality of antennas which are included in a node among the group consisting of the first node and the second node, and the specified antenna is used in the communication of the packet.

10. (withdrawn) The system of claim 9, wherein the first node comprises a base station, the second node comprises a customer premises equipment, and the system further comprises a plurality of nodes which comprises customer premises equipment, and the dedicated routing field in the packet further identifies at least one customer premises equipment as a node(s) in a path that the packet takes between the base station and a specific customer premises equipment device, wherein the specific customer premises equipment device is selected from the group consisting of the source of the packet and the destination of the packet.

11. (withdrawn) The system of claim 10, wherein a node in the path includes a plurality of antennas and a first antenna of the plurality of antennas is used to communicate with the base station, and a second antenna of the plurality of antennas is used to communicate with another node in the path, and wherein each antenna and the nodes in the path are identified in the packet.

12. (withdrawn) The system of claim 10, wherein the dedicated routing field includes further instructions to multicast the packet to a subset of the plurality of nodes.

13. (withdrawn) The system of claim 9, wherein the identifier identifies the antenna that transmits the packet.

14. (withdrawn) The system of claim 9, wherein the specified antenna is a specified antenna element and the plurality of antennas is a multibeam antenna that includes a plurality of antenna elements.

15. (withdrawn) The system of claim 14 wherein, wherein each element of the multibeam antenna is oriented in a different direction relative to an axis.

16. (withdrawn) The system of claim 14, wherein the element is tilted at an angle relative to a horizontal plane.

17. (original) A method of communicating over a wireless network with a packet comprising the steps of: inspecting a packet to determine an identifier that is included in a routing field in the packet; and transmitting the packet using an antenna among a plurality of antennas that is identified by the identifier.

18. (original) The method of claim 17, wherein the antenna is a directional antenna element and the plurality of antenna elements is a multibeam antenna.

19. (original) The method of claim 17, wherein the routing field of the packet further includes routing information, identifying at least one intermediary communication device between a source of the packet and a final destination of the packet.

20. (original) The method of claim 17, wherein the identifier identifies the antenna that receives the packet.

21. (original) The method of claim 17, wherein the identifier identifies the antenna that transmits the packet.

22. (original) The method of claim 17, wherein the plurality of antennas includes antennas having different polarizations.

23. (withdrawn) A method of communicating choosing a particular antenna among a plurality of antennas to communicate a with a particular node in a wireless network that comprises the steps of:

attempting at least once to create a communication link with the particular node using one antenna among a plurality of antennas;

measuring traffic performance of the communication link when a link is formed;

repeating said steps of attempting and measuring for each antenna among the plurality of antennas; and

choosing an antenna from among the plurality based on traffic performance for the particular node.

24. (withdrawn) The method of claim 23, wherein the antenna is an antenna element and the plurality of antennas is a multibeam antenna.

25. (withdrawn) The method of claim 23, wherein the plurality of antenna is at a destination of the packet.

26. (withdrawn) The method of claim 23, wherein the plurality of antenna is at a source of the packet.

27. (withdrawn) The method of claim 23, wherein the step of measuring the traffic performance comprises the steps of:

sending a series of data packets to the node;

counting how many packet are successfully received by the node; and

reporting the number of successfully received packets as a measure of the traffic performance.

28. (withdrawn) The method of claim 23, further comprising adding the antenna chosen from among the plurality of antennas to a routing table.

29. (withdrawn) The method of claim 23, further comprising instructing a one or more other node in the wireless network to attempt to communicate with the particular node, thereby establishing an indirect communication path to the particular node.

30. (withdrawn) A method of a customer premises equipment finding a node to communicate with, comprising the steps of: listening for packets that include the network address of the customer premises equipment in the packet; and responding to said packet.

31. (withdrawn) The method of claim 30, wherein the network address is included in a routing information block that is included in the packet.

32. (withdrawn) The method of claim 30, wherein the network address is included in a destination address field that is included in the packet.

33. (withdrawn) The method of claim 30, wherein the customer premises equipment includes a plurality of antennas, and the customer premises equipment switches between the plurality of antennas to listen for said packet.

34. (withdrawn) The method of claim 33, wherein the switching between the plurality of antennas occurs at regular intervals.

35. (withdrawn) The method of claim 33, wherein the switching between the plurality of antennas occurs at intermittent intervals.

36. (withdrawn) The method of claim 33, wherein the plurality of antennas is a multibeam antenna and each antenna is an antenna element of the multibeam antenna.

37. (withdrawn) A system comprising a first node and a second node in a wireless network, wherein a packet is used for communicating between the first and second node, and the packet includes a dedicated routing field that includes an identifier that identifies a specified element of a multibeam antenna which is included in a node among the group consisting of the first node and the second node, and the specified element is used in the communication of the packet.

38. (withdrawn) The system of claim 37, wherein the first node comprises a base station, the second node comprises a customer premises equipment, and the system further comprises a plurality of nodes which comprises customer premises equipment, and the dedicated routing field in the packet further identifies at least one customer premises equipment as a node(s) in a path that the packet takes between the base station and a specific customer premises equipment device, wherein the specific customer premises equipment device is selected from the group consisting of the source of the packet and the destination of the packet.

39. (withdrawn) The system of claim 40, wherein one node in the path includes a multibeam antenna that includes a plurality of elements and a first element of the multibeam antenna is used to communicate with the base station, and a second element of the multibeam antenna is used to communicate with another node in the path, and wherein each element and the nodes in the path are identified in the packet.

40. (withdrawn) The system of claim 38, wherein the dedicated routing field includes further instructions to multicast the packet to a subset of the plurality of nodes.

41. (withdrawn) The system of claim 38, wherein the identifier identifies the element that transmits the packet.

42. (withdrawn) The system of claim 37 wherein, wherein each element of the multibeam antenna is oriented in a different direction relative to an axis.

43. (withdrawn) The system of claim 37, wherein the element is tilted at an angle relative to a horizontal plane.

44. (original) A method of communicating over a wireless network with a packet comprising the steps of: inspecting a packet to determine an identifier that is included in a routing field in the packet; and transmitting the packet using an element among a plurality of element in a multibeam antenna that is identified by the identifier.

45. (original) The method of claim 44, wherein the routing field of the packet further includes routing information, identifying at least one intermediary communication device between a source of the packet and a final destination of the packet.

46. (original) The method of claim 44, wherein the identifier identifies the element that transmits the packet.

47. (withdrawn) A method of communicating choosing a particular element among a plurality of elements in a multibeam antenna to communicate with a particular node in a wireless network that comprises the steps of:

attempting at least once to create a communication link with the particular node using one element among a plurality of elements in a multibeam antenna;

measuring traffic performance of the communication link when a link is formed;

repeating said steps of attempting and measuring for each element among the plurality of elements; and

choosing an element from among the plurality based on traffic performance for the particular node.

48. (withdrawn) The method of claim 47, wherein the multibeam antenna is at a destination of the packet.

49. (withdrawn) The method of claim 47, wherein the multibeam antenna is at a source of the packet.

50. (withdrawn) The method of claim 47, wherein the step of measuring the traffic performance comprises the steps of:

sending a series of data packets to the node;

counting how many packet are successfully received by the node; and

reporting the number of successfully received packets as a measure of the traffic performance.

51. (withdrawn) The method of claim 47, further comprises adding the element chosen from among the plurality of elements to a routing table.

52. (withdrawn) The method of claim 47, further comprising instructing a one or more other node in the wireless network to attempt to communicate with the particular node, thereby establishing an indirect communication path to the particular node.

53. (withdrawn) A system comprising a first node and a second node in a wireless network; wherein a packet is used for communicating between the first and second node, and the packet includes a dedicated routing field that includes an antenna identifier and an element identifier, wherein the antenna identifier identifies a specified antenna among a plurality of antennas which are included in a node among the group consisting of the first node and the second node, and the specified antenna is a multibeam antenna including a plurality elements and the element identifier identifies a specific element among the plurality of elements and the specified element of the specified antenna is used in the communication of the packet.

54. (withdrawn) The system of claim 53, wherein the first node comprises a base station, the second node comprises a customer premises equipment, and the system further comprises a plurality of nodes which comprises customer premises equipment, and the

dedicated routing field in the packet further identifies at least one customer premises equipment as a node(s) in a path that the packet takes between the base station and a specific customer premises equipment device, wherein the specific customer premises equipment device is selected from the group consisting of the source of the packet and the destination of the packet.

55. (withdrawn) The system of claim 54, wherein a node in the path includes a plurality of antennas and a first antenna of the plurality of antennas is used to communicate with the base station, and a second antenna of the plurality of antennas is used to communicate with another node in the path, and wherein each antenna and the nodes in the path are identified in the packet.

56. (withdrawn) The system of claim 54, wherein a node in the path includes a multibeam antenna which includes a plurality of elements and a first element of the plurality of elements is used to communicate with the base station, and a second element of the plurality of element is used to communicate with another node in the path, and wherein each element and the nodes in the path are identified in the packet.

57. (withdrawn) The system of claim 54, wherein the dedicated routing field includes further instructions to multicast the packet to a subset of the plurality of nodes.

58. (withdrawn) The system of claim 53, wherein the antenna identifier identifies the antenna that transmits the packet.

59. (withdrawn) The system of claim 53, wherein the element identifier identifies the element that transmits the packet.

60. (withdrawn) The system of claim 53 wherein, wherein each element of the multibeam antenna is oriented in a different direction relative to an axis.

61. (withdrawn) The system of claim 53, wherein the element is tilted at an angle relative to a horizontal plane.

62. (original) A method of communicating over a wireless network with a packet comprising the steps of: inspecting a packet to determine an antenna identifier and a element identifier that is included in a routing field in the packet; and transmitting the packet using a specific element of a specific antenna among a plurality of antennas wherein the specific antenna is identified by the antenna identifier and the specific element is identified by the element identifier.

63. (original) The method of claim 62, wherein the routing field of the packet further includes routing information, identifying at least one intermediary communication device between a source of the packet and a final destination of the packet.

64. (original) The method of claim 62, wherein the antenna identier identifies the antenna that transmits the packet.

65. (original) The method of claim 62, wherein the element identifier identifies the element that transmits the packet.

66. (withdrawn) A method of communicating choosing a particular antenna among a plurality of antennas wherein each antenna includes a plurality of elements to communicate with a particular node in a wireless network that comprises the steps of:

attempting at least once to create a communication link with the particular node using one element among the plurality of elements included in an antenna among the plurality of antennas;

measuring traffic performance of the communication link when a link is formed;

repeating said steps of attempting and measuring for each element among the plurality of elements and the plurality of antennas; and choosing an element from among the plurality of elements and antennas based on traffic performance for the particular node.

67. (withdrawn) The method of claim 66, wherein the plurality of antenna is at a destination of the packet.

68. (withdrawn) The method of claim 66, wherein the plurality of antenna is at a source of the packet.

69. (withdrawn) The method of claim 66, wherein the step of measuring the traffic performance comprises the steps of:

sending a series of data packets to the node;

counting how many packet are successfully received by the node; and

reporting the number of successfully received packets as a measure of the traffic performance.

70. (withdrawn) The method of claim 66, further comprising adding the antenna and the element chosen from among the plurality of antennas and elements to a routing table.

71. (withdrawn) The method of claim 66, further comprising instructing a second node in the wireless network to attempt to communicate with the particular node, wherein the second node includes the plurality of antennas.